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Suppression of stimulated Brillouin scattering with large levels of stimulated Raman scattering in laser plasma interactions *

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The first experimental evidence for suppression of stimulated Brillouin scattering (SBS) due to large stimulated Raman scattering (SRS) is presented. Gasbag targets are irradiated by nine beams of the Nova laser to create ≥ 2 mm size, 3 keV plasmas. A 351 nm interaction laser is used with beam smoothing to drive SRS and SBS with a fixed average intensity of ~ 2×10^{15} W / cm^2. The electron density n_e is varied between 0.06 - 0.15 n_{cr} using mixtures of C_3H_8 / C_5H_{12} or CO_2 / CF_4. The estimated electron plasma wave damping increases a factor of 20 as density decreases, and the SRS levels decrease as expected. The estimated SBS growth decreases as the electron density decreases. However, observed SBS levels increase for lower density and are anti-correlated with the observed SRS levels. These experimental results will be presented and possible mechanisms for the competition will discussed.

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